

Ground living flea beetles from the Himalayas

(Coleoptera, Chrysomelidae, Alticinae)

By Gerhard Scherer

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Berlese samples from ground litter in Nepal and Darjeeling District brought several ground living flea beetles to light. The ground living flea beetles are frequently unwinged, without humeral and basal calli on elytra. Apterous Alticinae can nearly be considered as characteristic for the Oriental fauna. Fifteen wingless species and three genera from the Himalayas are described as new. The genus *Amydus* Chen, considered as junior synonym of *Trachyaphthona* Heikertinger, is reestablished. Two new species of the genus *Batophila* Foudras and one of the genus *Minota* Kutschera, which had been hitherto known only from the Palaearctic Region, were discovered in the Himalayas.

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Introduction

The Oriental Alticinae fauna is noted for its numerous apterous species e. g. from the genera *Aphthonoides* (Jacoby 1885), *Longitarsus* (Latreille 1829), *Hemipyxis* (Dejean 1837), *Trachyaphthona* (Heikertinger 1924), and *Xuthea* (Baly 1865). The extremes are those genera which include only unwinged species; they lost the humeral and basal calli on their elytra, some even have a reduced scutellum. No other Alticinae fauna worldwide contains so many apterous genera as the Oriental Region. We do not know, however, whether the apterous genera are widely distributed in the Oriental Region or they are really accumulated in Sri Lanka or especially in the Himalayas, where most of them come from at present. Indeed the Himalayas has been of special interest for collectors during the last years. Most of the apterous genera have been discovered by collecting techniques especially used for ground living beetles, such as Staphylinidae, Pselaphidae, or Scaphidiidae. These wingless flea beetles cannot fly, but all of them show considerably enlarged hind femora and they are able to jump. They must be living close to the ground, for they are rare or unknown from material collected by sweeping only. We know nothing about their biology at present; new perspectives will open up when we will know something about their living habits. Six genera, three new for science (*Paraminota*, *Loeblaltica*, *Eudoliamorpha*), one formerly considered as a synonym (*Amydus* Chen, 1935), two hitherto known only from the Palaearctic Region (*Batophila* Foudras, *Minota* Kutschera) had been added to the already recorded apterous genera *Alytus* (Jacoby 1887), *Benedictus* (Scherer 1969), *Bhutajana* (Scherer 1979), *Clavicornaltica* (Scherer 1974), *Ivalia* (Jacoby 1887), *Kamala* (Maulik 1926), *Martensomela* (L. Medvedev 1984), *Nepallicrepis* (Scherer 1969), and *Taizonia* (Chen 1934).

This outstanding material was collected in 1978 by the Drs. Cl. Besuchet and I. Löbl, Muséum Histoire Naturelle, Genève and in 1981 by the Drs. I. Löbl and A. Smetana, latter of the Biosystematic Research Institute, Ottawa. All holotypes and paratypes are either in the collection of the Muséum d'Histoire Naturelle, Genève, Switzerland or in the Canadian National Collection (CNC), Ottawa, Canada, as indicated. Some paratypes are deposited in the Zoologische Staatssammlung, München.

Genus *Aphthonoides* Jacoby

Aphthonoides Jacoby, 1885, Ann. Mus. Civ. Genova ser. 2, 2: 59 (genotype: *A. beccarii* Jacoby – Java)

Because of its hind legs a strange looking genus. The femora apple pip – like, tibia extremely shortened, with a very long apical narrowly channelled spine, which is about three times as long as the concerning tibia and which margins are set with small teeth; tarsi inserted on short tibiae not on its apex but close to base near femora.

The apterous species from the Himalayas seem to be very young phylogenetic units. They provide enormous difficulties to define them, even their aedoeagi are of low information for separating the species and seem to vary from one population to the other.

Aphthonoides rotundipennis Scherer

(Figs 1 a, 2 a)

Scherer, 1969, Pacif. Ins. Monogr. 22: 33 (India, West Bengal, Darjeeling – Mus. Frey)

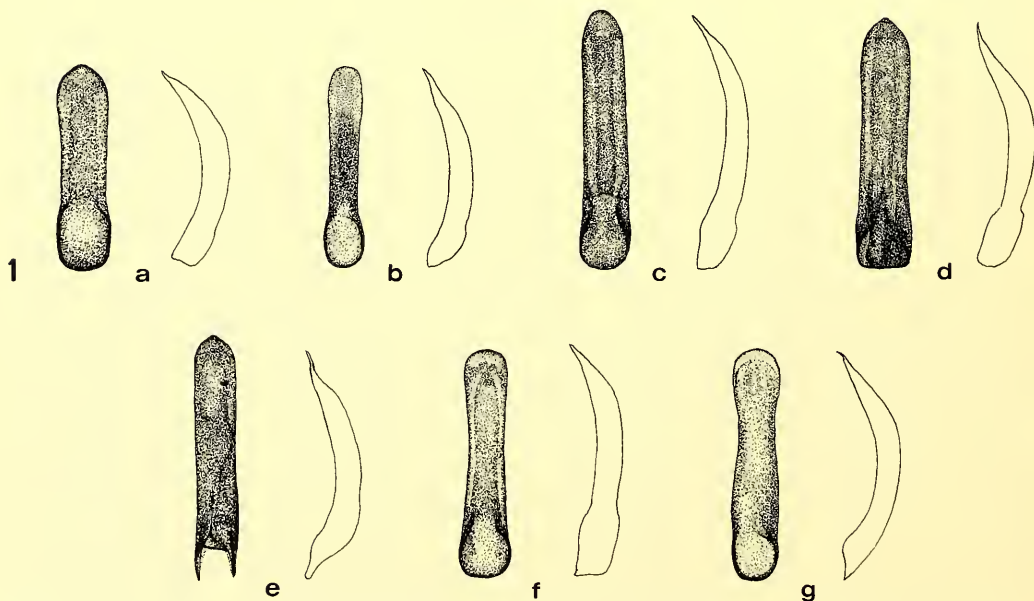


Fig. 1 a–g. Aedocagus of *Aphthonoides*. a. *rotundipennis* Scherer; b–c. *himalayensis* L. Medvedev (b. type); f. *carinipennis*, spec. nov.; g. *picea*, spec. nov.

This species was described in accordance with one female from Darjeeling. In between more material was collected. Fig. 1 a shows the aedeagus, which length is 0,43 mm.

INDIA, West Bengal, Darjeeling District, Ghoom, Lopchu, 2000 m, 12. X. 78 3 ♂♂, 4 ♀♀, leg. Besuchet & Löbl (Mus. Hist. Nat., Geneva).

Aphthonoides himalayensis L. Medvedev

(Figs 1 b–e, 2)

Medvedev, L., 1984, Senckenbergiana biol. 65 (1/2): 49, figs 4, 8, 9 (Type: Nepal: Katmandu-Tal – Forschungsinstitut Senckenberg, Frankfurt). Fig. 4 and 7 are changed by mistake, fig. 4 shows the aedeagus of *A. himalayensis*.

All specimens treated here as *Aphthonoides himalayensis* have a somewhat broader pronotum than the type (type 0,40 mm, the others 0,44–0,46 mm, average 0,45 mm (n = 8) and the aedeagus is longer 0,50–0,52 mm (type 0,40 mm); the aedeagus shows much variation (fig. 1 b–e) and it is not clear if those are populations or species of a very close “Artenkreis”. The head of the type specimen is more smooth than from those specimens treated here. The pronotum of *A. rotundipennis* Scherer, a very related species, is distinctly broader (0,49–0,57 mm, average 0,52 mm (n = 7), the aedeagus is different (fig. 1 a), and has no sutural angle on elytral apices, although traces of them can sometimes be seen, e. g. type (fig. 2 a–b).

INDIA, West Bengal, Darjeeling District, Mahandi, 1200 m, 19. X. 78 1 ♂, 1 ♀; Tiger Hill, 2200–2300 m, 13. X. 78 1 ♂, 1 ♀ leg. Besuchet & Löbl (Mus. Hist. Nat., Geneva). – NEPAL, Phulchoki. 2600 m, 11.–14. 6. 1976 1 ♀ leg. Wittmer & Baroni (Naturhist. Mus., Basel); Khandbari District, Bakan, W of Tashigaon, 3200 m, 3. IV. 1982, 1 ♂; above Sheduwa, 300 m, 1. IV. 1982 1 ♂ A. & Z. Smetana; Prov. Bagmati, Yardang Ridge NE Barabhise, 3250 m, 5. V. 81 1 ♀ leg. Löbl & Smetana (CNC, Ottawa).

Aphthonoides carinipennis, spec. nov.

(Figs 1 f, 2 c)

Holotype ♂. NEPAL, Prov. Bagmati, above Shermathan, 2900 m, 26. IV. 81, leg. Löbl & Smetana (CNC, Ottawa). – Paratypes ♀♀. NEPAL, same data as holotype, three females in CNC, Ottawa, two females Z. St. S., Munich.

Diagnosis. ♂ (holotype): Length 1,36 mm, width 0,67 mm. ♀♀ (paratypes): length 1,23–1,47 mm, average 1,38 mm (n = 5). Width: 0,66–0,83 mm, average 0,75 mm (n = 5).

Description

Head and pronotum reddish brown; elytra shiny dark pitch brown, their apices and margins somewhat reddish; mouthparts, antennae, and legs bright reddish brown.

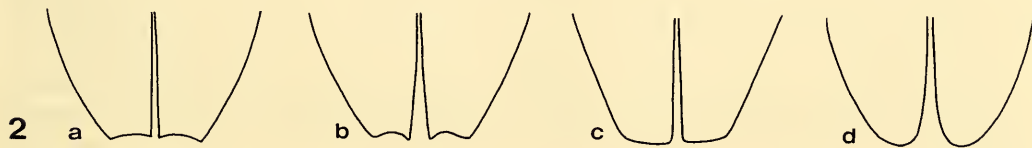


Fig. 2 a–d. Elytral apices of *Aphthonoides*. a. *rotundipennis* Scherer; b. *himalayensis* L. Medvedev (type); c. *carinipennis*, spec. nov.; d. *picea*, spec. nov.

©ZooHead behind frontal lines somewhat wrinkled; frons between eyes 0,24 mm wide; one transverse diameter of eye 0,10 mm; antennal calli very flat, laying side by side, divided by a straight fine line, sending processes between antennal rims; frons more or less roof like; genae long, a little longer than length of eye.

Antennae slender, not conspicuously thickening apically, extending to middle of elytra; length of antennal segments in mm: 0,12 : 0,08 : 0,06 : 0,08 : 0,09 : 0,09 : 0,09 : 0,10 : 0,09 : 0,10 : 0,14.

Pronotum with longitudinal wrinkles; sides nearly straight; front angles obtuse; constricted at base; hind angles directed acutely outwards; length 0,36 mm, width near front angles 0,46 mm, on hind angles (without acute hind angles) 0,39 mm.

Elytra without humeral and basal calli; all intervals obviously costate, especially sharp and knife-blade like the one next to the side margins; apices truncate, but without sutural angles (fig. 2 c).

Scutellum broad and short.

Aedoeagus (fig. 1 f) 0,47 mm long.

Variation. All five females on question have the elytra less dark, but more reddish brown; two specimens have head and pronotum less wrinkled; the elytral intervals are distinctly costate, but not as strong as in the male, but the knife-blade-like name giving interval is existing.

Discussion

This species is easily recognizable on its knife-blade-like costae on elytra next to the margin.

Aphthonoides picea, spec. nov.

(Figs 1 g, 2 d)

Holotype ♂. INDIA, West Bengal, Darjeeling District, Tonglu, 3 100 m, 16. X. 78, leg. Besuchet & Löbl (Mus. Hist. Nat., Genève). — Paratypes. INDIA, West Bengal, Darjeeling District, Tonglu, 2 700 m, 16. X. 78 2 ♂♂. — Tiger Hill, 2 500–2 600 m, 18. X. 78 4 ♂♂, 2 ♀♀, leg. Besuchet & Löbl (Mus. Hist. Nat., Genève and two paratypes in Z. St. S. Munich).

Diagnosis. Length: ♂♂, holotype 1,40 mm, paratypes 1,20–1,40 mm, average 1,31 mm (n = 6); ♀♀ 1,20–1,36 mm (n = 2). Width: ♂♂, holotype 0,68 mm, paratypes 0,56–0,72 mm, average 0,60 mm (n = 6); ♀♀ 0,72–0,76 mm (n = 2).

Description

Head, pronotum, elytra, hind femora, and apical segments of antennae dark pitch brown; mouth parts, fore legs, tibiae and tarsi of hind legs, basal segments of antennae dirty yellowish brown.

Head shiny, with scattered extremely fine punctures; antennal calli extremely flat; distance between both eyes 0,20 mm, one transverse diameter of eye 0,11 mm; frontal carina roof-like with anterior transverse carina.

Antennae filiform, extending to middle of elytra; length of antennal segments in mm: 0,12 : 0,08 : 0,06 : 0,07 : 0,08 : 0,08 : 0,09 : 0,09 : 0,09 : 0,09 : 0,09 : 0,14.

Pronotum with fine scattered punctures and a tendency to longitudinal wrinkles, shiny; front angles obtuse; sides nearly straight; widest at front angles (0,44 mm); base constricted (0,40 mm), hind angles of pronotum not as extremely directed sideways as in the preceding species (0,41 mm); length of pronotum 0,30 mm.

Elytra without basal calli, humeral calli replaced by a longitudinally vaulted interval in the humeral corner; there is a slight tendency to convex elytral intervals; elytral apices not truncate (fig. 2 d); apterous.

Scutellum small, only hind edge visible, hidden by the pronotum.

Aedoeagus (fig. 1 g) 0,48 mm long.

© Variation: The frontal carina is not always as roof-like as in the type, it can be a longitudinal ridge or triangularly widening in front; four specimens have darkened tarsal segments; some specimens have stronger antennae and some less darkened antennae apically.

Discussion

Differences to other species are shown in the key.

Key to *Aphthonoides* species from the Himalayas

- 1 (4) Winged species with distinct humeral calli on elytra.
- 2 (3) Completely dark pitch brown coloured *beccarii* Jacoby
Distribution: From Japan, China, Taiwan, Java, Sumatra, Bhutan.
- 3 (2) Dark pitch brown with a yellowish bright base on elytra.
An undescribed species from Nepal: Katmandu, only one female known (CNC).
- 4 (1) Apterous, without humeral calli on elytra.
- 5 (6) Elytral interval next to lateral one extremely costate, shaped like a knife-blade. *carinipennis*, spec. nov.
- 6 (5) Elytral intervals when costate all of same shape.
- 7 (11) Elytral apices truncate (fig. 2 a–b).
- 9 (10) Truncate elytral apices with distinct sutural angles (fig. 2 b); pronotum 0,44–0,46 mm broad, average 0,45 mm (n = 8), type only 0,40 mm; aedoeagus (figs. 1 b–e) 0,47–0,55 mm long, average 0,52 mm (n = 4), type only 0,44 mm, 0,08–0,10 mm broad, average 0,09 mm (n = 4), type 0,08 mm *himalayensis* L. Medved.
- 10 (9) Truncate elytral apices without or only indicated sutural angle (fig. 2 a); pronotum 0,49–0,57 mm broad, average 0,52 mm (n = 7), type 0,51 mm; aedoeagus shorter and broader, 0,42 mm long and 0,11 mm broad *rotundipennis* Scherer
- 11 (7) Elytral apices not truncate, evenly rounded (fig. 2 d) *picea*, spec. nov.

Clavicornaltica himalayensis L. Medvedev

Medvedev, L., 1984, *Senckenbergiana biol.* 65 (1/2): 56.

New collection records: NEPAL, Kathmandu Distr., Kathmandu, Gokarna Forest, 31. III. 1981, 1 400 m, leg. I. Löbl & A. Smetana (CNC) 5. – Lalitpur Distr., Godavari, 7.–13. VIII. 1967, 6 000', CNE, (CNC) 4; Phulcoki, 13.–17. VIII. 1967, 6 000', CNE, (CNC) 1. – Nuwakot Distr., Malemchi, 10. IV. 1981, 2 800 m, I. Löbl & A. Smetana, (CNC) 1; below Thare Pati, 10. IV. 1981, 3 300 m, I. Löbl & A. Smetana, (CNC) 1. – Khandbari Distr., Arun River at Num, 10. IV. 82, 1 500–1 600 m, A. & Z. Smetana, (CNC) 10; Bakan W Tashigaon, 4. IV. 1982, 3 250 m, A. & Z. Smetana, (CNC) 3; Forest NE Kuwapani, 12.–14. IV. 1982, 2 500 m, A. & Z. Smetana, (CNC) 3; Above Sheduwa, 31. III.–1. IV. 1982, 3 000 m, A. & Z. Smetana, (CNC) 3; Above Tashigaon, 5.–6. IV. 1982, 3 200–3 500 m, A. & Z. Smetana, (CNC) 3.

Genus *Amydus* Chen stat. nov.

Amydus Chen, 1935, *Bull. Soc. ent. France* 40: 76 (genotype: *Amydus castaneus* Chen – Sikkim)

Trachyaphthona Heikertinger: Scherer, 1969, *Pacif. Ins. Monogr.* 22: 80.

Short characterization. This genus is characterized by its large and convex pronotum, larger in the male than in the female, and its extremely short, but extraordinary broad scutellum (3–4 times broader than long); a further character is an impressed line located on the elytra close to the inner side of normal position of the humeral calli, which are absent in these wingless beetles.

Distance between eyes broad, about four times as broad as one square diameter of one eye; antennal calli well separated; frons triangular, somewhat convex extended between antennal calli; front margin of frons somewhat excavated.

Pronotum comparatively long (length to width about 7:9) and evidently convex, more in the male than in the female; middle of the base somewhat indented; front angles oblique; sides straight or moderately rounded; no impression on the pronotum.

Scutellum extremely broad and short, three or four times broader than long, rounded behind.

Elytra with a short impressed line located on inner side of normal position of humeral calli and with a shallow postbasal impression; wingless; punctation confused with a tendency to longitudinal rows, not in regular rows in the original description.

Anterior coxal cavities open; prosternal process broad, its surface excavated and prolonged backwards behind the coxae, with a corresponding articulation on the front margin of the mesothorax.

Legs strong, tibia apically broadened and somewhat canaliculated on upper surface, especially apical third with stiff bristles on outer edge, for reception of first tarsal segment in repose; first tarsal segment of hind tibiae only as long as the two following together; third tarsal segment bifid.

This genus was synonymized (Scherer 1969) with *Trachyapthona* Heikertinger 1924 to which it is very close. *Trachyapthona* has the antennal rims of the antennal sockets much closer together, laterally seen the frons is bent against the upper portion of the head, frons more plain; the large pronotum in combination with the short longitudinal impressed line on the elytra and its short and broad scutellum characterizes *Amydus*. The wingless *Trachyapthona ceylonensis* (Jacoby) has also a short and broad scutellum but not in the degree of *Amydus*. For there is now a further species known from *Amydus*, it seems that it is an own phylogenetic group which separates it from *Trachyapthona*.

***Amydus castaneus* Chen stat. nov.**

(Figs 3, 4a)

Amydus castaneus Chen, 1935, Bull. Soc. ent. France 40: 77 (Sikkim – Mus. Paris)

Trachyapthona castanea Scherer, 1969, Pacif. Ins. Monogr. 22: 80.

New locality records. INDIA, West Bengal, Darjeeling District, Tonglu, 3100 m, 16. X. 78 5♂♂, 4♀♀; Tiger Hill, 2200–2300 m, 13. X. 78 3♂♂, 3♀♀; Ghoom-Lopchu 2000 m, 12. X. 78 4♂♂, 1♀, leg. Besuchet & Loebli (Mus. Hist. Nat., Genève).

The pronotal and elytral punctation of this species varies from nearly smooth up to strong; the elytra may have a large dark spot in the middle or not.

***Amydus nepalensis*, spec. nov.**

(Figs 4, 5)

Holotype ♂. NEPAL, Prov. Bagmati, below Thare Pati, 3400 m, 13. IV. 81, leg. Löbl & Smetana (CNC, Ottawa). – Paratypes. NEPAL, Prov. Bagmati, below Thara Pati, 3400 m, same data as holotype 8♂♂, 2♀♀; 3500 m, 12. IV. 81 2♂♂, 1♀; 3300 m, 12. I. 81 1♂. – Prov. Bagmati, Yangri Ridge, 4200 m, 24. IV. 81, 3♂♂, 6♀♀; 4350 m, 22. IV. 81 2♀♀; 4150 m, 24. IV. 81, 6♀♀. – Prov. Bagmati, Mere Dara, 3200 m, 8. IV. 81 17♂♂, 16♀♀. – Prov. Bagmati, above Shermathan, 2900 m, 26. IV. 81 1♂ 1♀. – Prov. Bagmati, Yardang Ridge, NE Barahbise, 3250 m, 5. V. 81 1♂, 3♀♀, leg. Löbl & Smetana. – With strong punctures on the pronotum: Prov. Bagmati, Pokhare, NE Barahbise, 2700 m, 7. V. 81 1♂. – Khandbari Distr., For. above Ahale, 2400 m, 25. III. 82, 2♂♂; For. NE Kuwapan, 2450 m, 13. IV. 82 1♂. – Katmandu Distr., Phulcoki, 2600 m, 20. IV. 82 2♂♂, 2♀♀; 2550 m, 21. IV. 1982 6♀♀, Leg. A. & Z. Smetana (CNC, Ottawa, some paratypes in Zoologische Staatssammlung München).

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Diagnosis. Length: ♂♂ 0,94–1,80 mm, average 1,62 mm (n = 13); ♀♀ 1,88–2,24 mm, average 2,02 mm (n = 11). Width: ♂♂ 0,88–1,08 mm, average 1,00 mm (n = 13); ♀♀ 1,06–1,20 mm, average 1,16 mm (n = 11).

Description.

Chestnut brown; antennae, fore legs, antennal calli and frons, margins of pronotum, scutellum, base of elytra, suture close to base, sides and apical part of elytra brighter up to yellowish brown; punctures on elytra dark.

Head typical for the genus; frons 0,32 mm wide, square diameter of one eye 0,12 mm; head not visible from above.

Antennae (fig. 4b) comparatively short, extending over base of elytra; antennal segments 7–11 broadened and hairy, segments 8–10 as long as broad; the length (width in brackets) of antennal segments in mm: 0,18 (0,08) : 0,10 (0,06) : 0,08 (0,04) : 0,07 (0,05) : 0,09 (0,05) : 0,09 (0,06) : 0,08 (0,08) : 0,08 (0,08) : 0,08 (0,09) : 0,08 (0,09) : 0,14 (0,09).

Pronotum 0,8 mm broad and 0,5 mm long; sides in basal half nearly parallel and straight, a little constricted towards oblique front angles; upper surface very finely punctured.

Punctuation on elytra strong, confused, with a slight tendency for longitudinal rows; short longitudinal impression near base and weak postbasal transverse depression giving rise to weak basal callosity.

Aedoeagus (fig. 5) in lateral view very arched; its length 0,6 mm.

Variation. There is much variation in the punctuation of the pronotum and the elytra from weak to strong, from confuse to a distinct tendency of longitudinal rows; the colour varies from dark individuals with even darkened apical antennal segments to completely yellowish red specimens. In the female the pronotum is less convex, otherwise variation of punctuation and colour as in the males.

Discussion

A. nepalensis, spec. nov. is easily separable from *A. castaneus* Chen by the length of antennal segments, 8–10 are distinctly longer than wide in *castaneus*, but only as long as wide in *nepalensis* (fig. 4).

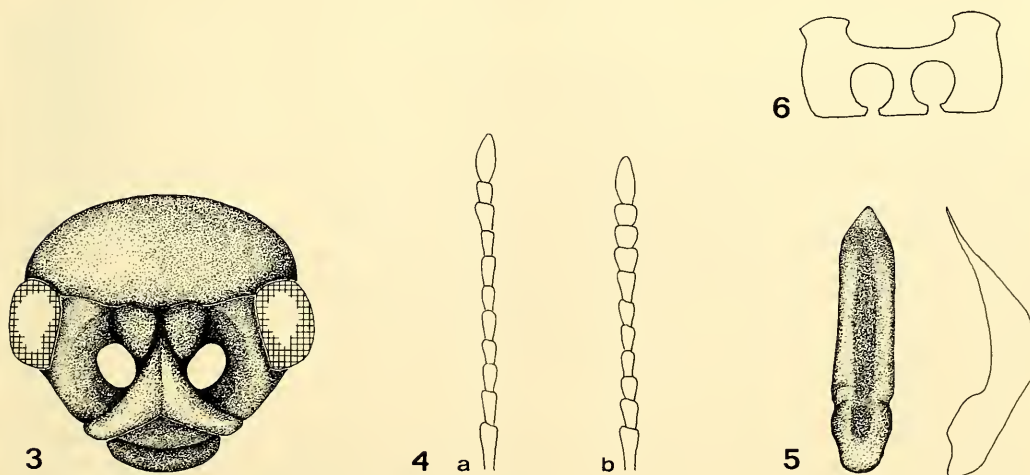


Fig. 3. Head of *Amydus castaneus* Chen.

Fig. 4a–b. Antennae of a. *Amydus castaneus* Chen; b. *A. nepalensis*, spec. nov.

Fig. 5. Aedoeagus of *Amydus nepalensis*, spec. nov.

Fig. 6. Open anterior coxal cavities of *Benedictus flavicalli*, spec. nov.

Scherer, 1969, *Pacif. Ins. monogr.* 22: 99; Medvedev, L., 1984, *Senckenbergiana biol.* 65 (1/2): 55 (key)

When the anterior coxal cavities, open in *Benedictus*, closed in *Nepalicrorepis*, are not visible clearly, characters of the elytra are useful to separate them. The edges of elytral lateral margins are visible from above in *Nepalicrorepis* and the epipleura, which are broad from base to apex, are horizontal. However in *Benedictus* the side margins are not visible from above behind the rounded base, because the sides are turned towards the underside; the epipleura taper from base to apex and are in oblique position. The shape of the aedeagus is also typical, slender in *Benedictus*, broad in *Nepalicrorepis*.

***Benedictus flavicalli*, spec. nov.**

(Fig. 6)

Holotype ♂. INDIA, W. B., Darjeeling District: Algarah, 1800 m, 9.X.78, leg. Besuchet & Löbl (Mus. Hist. Nat., Genève). – Paratypes. INDIA, W. B., Darjeeling District: Algarah, same data as holotype 1 ♂; Tiger Hill, 2200–2300 m, 13.X.78 4 ♂♂; Teesta, 250 m, 10.X.78 1 ♂; all leg. Besuchet & Löbl (Mus. Hist. Nat., Genève). – NEPAL: Prov. Bagmati, Pokhara, NE Barabise, 2800 m, 2.V.81 3 ♂♂, 2 ♀♀; Prov. Bagmati, above Shermatang, 2900 m, 26.IV.81, 1 ♂, 2 ♀♀; all leg. Löbl & Smetana (Canadian National Collection, CNC, Ottawa); Khandbari Distr. Bakan, W of Tashigaon, 3200 m, 3.IV.1982 1 ♀; Khandbari Distr., above Sheduwa, 300 m, 31.III.–IV.1982 2 ♂♂, 4 ♀♀; all leg. A. & Z. Smetana (CNC, Ottawa). Some paratypes in Zoologische Staatssammlung München.

Diagnosis. Length: ♂♂ 1,70–2,26 mm, average 1,95 mm (n = 13); holotype 2,14 mm; ♀♀ 1,88–2,22 mm, average 2,00 mm (n = 10). Width: ♂♂ 0,96–1,12 mm, average 1,06 mm (n = 13), holotype 1,12 mm; ♀♀ 1,06–1,28 mm, average 1,15 mm (n = 10).

Description

Reddish chestnut brown; two yellow raised subbasal calli on each elytron; antennae with segments 1–5 reddish brown, 6–8 pitch brown, 9–11 yellowish brown; legs dirty reddish brown.

Head smooth; line delimiting the very narrow antennal calli posteriorly very deep running obliquely to hind margin of eyes; frontal ridge between antennal sockets somewhat raised, thickened and narrowing anteriorly on the concave frons; distance between eyes 0,34 mm, square diameter of one eye 0,14 mm, distance between antennal sockets 0,08 mm.

Antennae extending over basal calli of elytra; segments 2–6 gradually thickening, 7–11 all of same width; the length of antennal segments in mm: 0,5 : 0,09 : 0,09 : 0,08 : 0,11 : 0,11 : 0,12 : 0,11 : 0,11 : 0,11 : 0,11.

Pronotum constricted at base with deep basal impression extending to side margins but interrupted before hind angles by fine longitudinal lines; basal impression on its front margin very exact, with a regular row of punctures; no additional punctures on pronotum; sides diverging in front, on anterior half somewhat rounded towards oblique front angles, somewhat constricted before front angles; width at hind setal pore 0,70 mm, at front setal pore 0,74 mm, at constricted base 0,64 mm; length of pronotum 0,62 mm.

Elytra with four yellowish subbasal calli, two on each side, one close to the very small and short scutellum and one replacing the humeral calli in this unwinged species; punctures arranged in nine regular rows with a very short scutellar row (three punctures), punctation diminished on the disc and towards apex; intervals with a trace of convexity; sutural angle produced into a small tooth. The open anterior coxal cavities shows fig. 6.

Upperside of tibiae rounded, only somewhat excavated at apex; first tarsal segment on all legs strong, as broad at apex as corresponding tibia, even a little broader on front legs.

©Variation: The elytral calli from the four males from Tiger Hill are darker than usual but still lighter than the ground colour of the elytra. The apical three antennal segments of these four specimens are darker, consequently their antennae appear more or less unicoloured. The deepness of the basal impression of the pronotum is variable: the male specimens from Nepal above Shermatang have a very shallow impression with a fine line of punctures, which are absent in the females; specimens from above Sheduja and Malemphi show a slightly deeper impression; specimens from West Bengal and Pokhara have a deep impression with a fine line of punctures; specimens from Bakan and those from "above Sheduja" have in addition to this fine row of punctures a few scattered ones in front of the impression. Not only the depth of the pronotal impression varies, but also the proportion of the pronotum; specimens, especially those from Pokhara and the Darjeeling District have the pronotal base somewhat more constricted.

Measures of pronotum: Length: ♂♂ 0,50–0,64 mm, average 0,57 mm (n = 13), ♀♀ 0,52–0,64 mm, average 0,59 mm (n = 10). Width: ♂♂ 0,64–0,74 mm, average 0,70 mm (n = 13), ♀♀ 0,66–0,80 mm, average 0,73 mm (n = 10).

The elytral punctures, usually fainter on disc, are sometimes coarse throughout.

Discussion

This species is easily separable from the other by its four subbasal elytral calli which are yellowish in most cases.

Benedictus leoi, spec. nov.

(Fig. 7)

Holotype ♂. INDIA, West Bengal, Darjeeling District, Tonglu, 3 100 m, 16. X. 1978, leg. Besuchet and Löbl (Mus. Hist. Nat., Genève). – Paratypes. INDIA, West Bengal, Darjeeling District, Tonglu, 3 100 m, 16. X. 1978 10 sps.; Tiger Hill, 2 500–2 600 m, 18. X. 1978 1 specimen (Mus. Hist. Nat., Genève; some paratypes Zoologische Staatssammlung München).

Diagnosis. Holotype: Length with head 1,60 mm, without head 1,40 mm, width 0,80 mm; paratypes: ♂♂ 1,3–1,48 mm, ♀♀ 1,50–1,68 mm.

Description

Bright reddish brown, vertex somewhat darker; tarsi infuscated; antennal segments 6–11 darker pitch brown.

Antennal calli triangular, very closely approximate, separated by the hind edge of the flat frontal ridge; frontal ridge narrowing somewhat in front on the moderately concave frons; back of antennal calli demarcated by a deep line leading obliquely to hind margin of eye; space beside antennal calli and behind antennal socket deeply impressed; a magnification of 100 shows in front of the front line a fine indistinct puncture like sculpture; distance between eyes 0,28 mm; square diameter of one eye 0,12 mm; distance between antennal sockets 0,08 mm.

Antennae extending to base of elytra; apical five segments somewhat wider and more gradually widening to apex; length of antennal segments in mm: 0,12 : 0,08 : 0,06 : 0,05 : 0,06 : 0,05 : 0,08 : 0,06 : 0,08 : 0,08 : 0,12.

Pronotum convex; sides scarcely visible from above, straight and parallel, not constricted at base and not rounded to oblique frontal angles; width 0,57 mm, length 0,46 mm; basal impression distinct but not deep, lateral folds very distinct, impression not extended over these folds to side margin.

Scutellum small; elytra comparatively narrow and pointed apically; punctation weak, longitudinal rows of punctures with disarrangements; lateral margins behind humeral calli not visible from above; sutural angle with a tooth.

Upper side of tibiae rounded, somewhat excavated only apically; all tibiae and femora seem to be compressed; first hind tarsal segment only one fourth as long as tibia; third tarsal segment often looking superficially entire but actually bilobed.

Aedoeagus 0,6 mm long (fig. 7).

Variation. Some specimens nearly have unicolorous bright reddish antennae and tarsi less darkened; many specimens have tibiae and femora not compressed as usual.

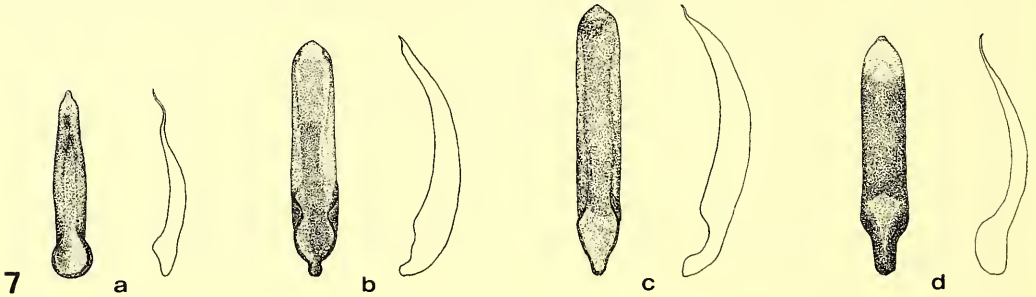


Fig. 7a-d. Aedoeagus of a. *Benedictus leoi*, spec. nov.; b. *Loebaltica decorata*, spec.; nov. c. *L. gerhardi* (L. Medvedev); d. *Bhutajana nepalensis*, spec. nov.

Derivatio nominis. This species is dedicated to Dr. Leo N. Medvedev, Moscow, who gave the first key (1949) and described three of four *Benedictus* species.

Key to the *Benedictus* species (parts adapted from Medvedev 1984)

- 1 (6) Elytral rows of punctures regular and distinct, at least on basal half.
- 2 (5) Sides of pronotum diverging conspicuously in front.
- 3 (4) Elytra with four yellowish subbasal calli, two on each side. *flavicalli*, spec. nov.
- 4 (3) Elytra without these calli *elisabethae* Scherer
- 5 (2) Sides of pronotum not diverging anteriorly *minutus* L. Medvedev
- 6 (1) Elytral rows of punctures indistinct with punctures weakly impressed and arranged irregularly.
- 7 (8) Antennae bicolor, brown or dark brown with one or two pale apical segments . . . *antennalis* L. Medvedev
- 8 (7) Antennae unicolor or darkening at apex *leoi*, spec. nov.

Loebaltica, gen. nov.

Head with oblique antennal calli, separated by hindportion of triangular frons.

Pronotum with transverse basal depression extended to sides near hind angles; latter without longitudinal folds; front angles thickened and oblique. Front coxal cavities open, prosternal process prolonged beyond coxae.

Elytra roundish convex; no basal and no humeral calli; side margins not turned ventrally, marginal edges visible from above; punctation of elytra besides a short scutellar and a marginal row arranged into nine longitudinal rows.

© Hind femora strongly enlarged; upper side of hind tibiae channelled; first tarsal segment of hind tarsus half as long as hind tibia; upper side of both front and middle tibiae rounded.

Base of aedoeagus constricted, not rounded.

Genotype: *Loeblaltica decorata*, spec. nov.

Loeblaltica differs from *Benedictus* by the channelled hind tibiae, by the long first segment of hind tarsus, by the elytral lateral margins visible from above, and by the triangular shape of frons. The open anterior coxal cavities are more widely open than in *Benedictus*. The long and narrow first segment of hind tarsus suggests possible relationship to *Ivalia* Jacoby.

Derivatio nominis. This genus is dedicated to Dr. Ivan Löbl, Muséum d'Histoire Naturelle, Genève, in recognition of his contribution to the knowledge of the Himalayan fauna.

Loeblaltica decorata, spec. nov.

(Fig. 7b)

Holotype ♂, INDIA, W. B., Darjeeling District, Algarah, 9.X.78, leg. Besuchet & Löbl (Mus. Hist. Nat., Genève). – Paratypes. INDIA, W. B., Darjeeling District, same data as holotype 1♂, 3♀. – Algarah-Labha, 1900 m, 11.X.78 1♂. – Mahandi, 1200 m, 6.X.78 2♂♂, 1♀. – Tiger Hill, 2500–2600 m, 18.X.78 9♂♂, 11♀♀. – Ghoom, 1500 m, 15.X.78 1♀. – Ghoom-Lopchu, 2000 m, 14.X.78 1♂, 1♀. – Teesta, 250 m, 10.X.78 1♀, leg. Besuchet & Löbl (Mus. Hist. Nat., Genève, some paratypes Zool. Staatssammlung München).

Diagnosis. Length: ♂♂ with head 1,78–2,20 mm, average 1,92 mm ($n = 13$), holotype 2,0 mm; without head 1,64–1,96 mm, average 1,77 mm ($n = 13$); ♀♀ with head 1,94–2,20 mm, average 2,07 mm ($n = 10$), without head 1,84–2,06 mm, average 1,94 mm ($n = 10$). Width: ♂♂ 1,00–1,20 mm, average 1,11 mm ($n = 13$); ♀♀ 1,10–1,32 mm, average 1,24 mm ($n = 10$); holotype ♂ 1,20 mm.

Description

Head and pronotum chestnut brown; elytra reddish yellow with black roundish spot in middle of each elytron; antennae dark pitchbrown, nearly black, especially segments 5–9, two basal and two apical segments yellowish; legs reddish brown, tibiae and tarsi of front and middle legs darkened.

Head with deep lines behind “bean” shaped antennal calli and with weak transverse depression reaching hind margin of each eye; frons triangular, with a short ridge-like structure between antennal insertions; eyes comparatively large, one square diameter 0,16 mm, distance between eyes 0,28 mm; distance between antennal insertions 0,08 mm.

Antenna comparatively thin and long, extending to dark spot of elytra; length of antennal segments in mm as follows: 0,18 : 0,10 : 0,11 : 0,13 : 0,16 : 0,16 : 0,16 : 0,16 : 0,16 : 0,20.

Pronotum 0,56 mm long, somewhat constricted at base; base evenly rounded; front angles oblique; basal impression distinct, as long as one fourth of pronotal length; sides somewhat curved; pronotum widest at middle, width there nearly as large as width at level of front setal pore (0,8 mm).

Scutellum small, short, and rounded.

Elytra very convex; with nine regular rows of punctures; punctures scarcely engraved, noticeable almost only by their dark tint only; marginal interval somewhat raised; apterous.

Hind tibia somewhat curved when seen from above, deeply channelled; hairy, with a row of stiff bristles at both sides apically.

Aedoeagus 0,78 mm long (fig. 7b).

Variation. The dark elytral spots vary considerably in size but they never extend over entire elytra. The pronotum and the head may be very dark. The antennae may be entirely black except for the pale two basal segments, or entirely reddish brown, in some specimens only the apical segment, in others

the three apical segments are yellow; hind tibiae may be dark; in several specimens it is difficult to decide if the punctures on the elytral disc are arranged in regular rows or if they are disarranged, but the marginal row always shows the regular arrangement.

***Loeblaltica gerhardi* (L. Medvedev), comb. nov.**

Benedictus gerhardi Medvedev, L., 1984, Senckenbergiana 65 (1/2): 55 (Nepal: Ilam District).

Locality records: INDIA, W. B., Darjeeling District, Tonglu, 3100 m, 16.X.78 2 ♀♀, leg. Besuchet & Löbl (Mus. Hist. Nat., Genève). – NEPAL, Khandbari District, above Tashigaon, 3500 m, 6.IV.82, 5 sps.; Bakan, W of Tashigaon, 3200 m, 5.IV.82, 4 specimens; Forest above Ahale, 2300 m, 26.III.82, 3 sps., leg. A. & Z. Smetana (Canadian National Collection, CNC, Ottawa; some sps. Zoologische Staatssammlung München).

Loeblaltica gerhardi bears all the characters which are characteristic for this new genus. Fig. 7c shows the aedoeagus.

Genus *Bhutajana* Scherer

Scherer, 1979, Entomologica Basiliensia 4: 132.

Bhutajana was described for the single species *metallica* from Bhutan, which is known from altitudes of 2450–3400 m. Now a second apterous species was found in Nepal.

***Bhutajana nepalensis*, spec. nov.**

(Fig. 7d)

Holotype ♂. NEPAL, Prov. Bagmati, Yangri Ridge, 4350 m, 22.IV.81, leg. Löbl & Smetana (CNC Ottawa). – Paratype ♀. NEPAL, same data as holotype, 1 specimen (Z. S. München).

Diagnosis. Length: ♂ 2,04 mm, ♀ 2,32 mm; width: ♂ 1,08 mm, ♀ 1,16 mm.

Description

Head, pronotum, and elytra metallic brass-coloured; legs and antennae reddish brown, hind femora darker reddish, also fourth tarsal segments and more or less the apical segments of antennae; ventral side dark pitchbrown.

Head smooth; antennal calli very distinct, elliptical, well separated behind and lateral by strong frontal lines, between them hind edge of frontal carina which narrows anteriorly; frons exactly twice as broad as one transversal diameter of eye (0,32 : 0,16 mm).

Antennae extending over first third of elytra; antennal segments 7–11 gradually thickening; the segments in mm: 0,19 : 0,09 : 0,11 : 0,11 : 0,12 : 0,10 : 0,13 : 0,12 : 0,12 : 0,12 : 0,16.

Pronotum covered with fine scattered punctures; depression on pronotal base as typical for the genus from one hind angle to the other; sides evenly rounded, narrowly margined, constricted at base; the truncate front angles not separated very obviously from lateral margin and bent to front margin; length of pronotum 0,56 mm, width at base 0,64 mm, at middle 0,70 mm, in front of front angle 0,52 mm.

Elytra with fine scattered punctures like on pronotum; no humeral and no basal calli; scutellum apically rounded, short, three times as broad as long; apterous.

Upper side of hind tibiae flattened, its first tarsal segment comparatively strong, on its apex nearly as broad as apex of tibia and about as long as the following segments together; upperside of tibiae of four fore legs rounded, their first tarsal segment on apex nearly as broad as tibia on apex.

Female, First tarsal segments on all legs less broad; antennae less strong.

Discussion

This is the second known species of this genus and separates from *B. metallica* as follows: *Bhutanajana metallica* Scherer 1979 has much longer antennae, front angles of pronotum are more oblique and sides of pronotum more straight; legs are darker and first tarsal segment of hind tarsi much more thin.

Genus *Nepalicropis* Scherer

Scherer, 1969, Pacif. Ins. Monogr. 22: 119.

Nepalicropis was described for the single species *darjeelingensis*, which shows a very exact and deep pronotal impression. Three additional species are known now and it proofs that the basal impression on pronotum can be less deep in certain species. Separating characters from *Benedictus* are mentioned in the chapter of this genus.

Nepalicropis smetanai, spec. nov.

(Fig. 8a)

Holotype ♂. NEPAL, Khandbari District, above Sheduwa, 3000 m, 31. III. – 1. IV. 1982, leg. A. & Z. Smetana (CNC, Ottawa). – Paratypes. NEPAL, Khandbari District, above Sheduwa, same data as holotype 13 ♂♂, 30 ♀♀; 2. IV. 82 1 ♂, 1 ♀; Khandbari District, For. above Ahale, 2300 m, 26. III. 82 2 ♂♂; 2400 m, 25. III. 82 8 ♂♂, 5 ♀♀; Khandbari Distr., For. NE Kuwapani, 2450 m, 13. IV. 82 3 ♂♂, 2 ♀♀; 2500 m, 14. IV. 82 11 ♂♂, 17 ♀♀; Khandbari Distr., above Tashigaon, 3100 m, 8. IV. 82 2 ♂♂, 4 ♀♀; 3200 m, 5. IV. 82 1 ♂, 4 ♀♀, leg. A. & Z. Smetana (Type and paratypes in CNC, Ottawa, some paratypes in Zoologische Staatssammlung München).

Diagnosis. Length: ♂♂ 1,84–2,12 mm, type 2,12 mm, average 1,98 mm (n = 17); Width: ♂♂ 1,20–1,32 mm, type 1,24 mm, average 1,27 mm (n = 15); Length: ♀♀ 2,16–2,36 mm, average 2,24 mm (n = 18); width: ♀♀ 1,28–1,52 mm, average 1,42 mm (n = 17).

Description

Upside and hind femora reddish brown; labrum, antennae, and underside somewhat more bright, more yellowish brown.

Head smooth; interantennal carina swollen and triangular widening anteriorly; space between antennal rims as wide as diameter of eye (0,16 mm); frons 0,44 mm broad; antennal calli equilateral triangles, between them hind edge of interantennal carina; eyes comparatively small.

Antennae gradually somewhat thickening towards apex and all segments somewhat pubescent; the segments in mm: 0,18 : 0,10 : 0,11 : 0,08 : 0,10 : 0,10 : 0,11 : 0,11 : 0,10 : 0,10 : 0,18.

Sides of pronotum straight and nearly parallel; width just before beveled and thickened front angles 0,84 mm, on hind angles 0,88 mm; surface covered with extreme fine punctures; near base a very weak transverse impression, bounded at its sides by somewhat stronger grooves; the transverse impression marked by fine punctures which are only a trace stronger than the others on the pronotum.

Elytra without humeral and without basal calli; extremely short alae; scutellum normal; punctures in exact and comparatively strong lines, short scutellar row on right elytron three and on left elytron two punctures long; punctures distinct and comparatively strong, longitudinal intervals with a trace of convexity; elytral sides rounded.

Aedoeagus fig. 8a.

©Zoo Variation: There is much variation in the depth of the antebasal impression of the pronotum. Many specimens have head and pronotum somewhat darker, elytral punctures have in some specimens a dark halo; specimens from Ahale have a metallic lustre like an unripe plum; males are shorter, narrower, they have the elytra apically more tapering.

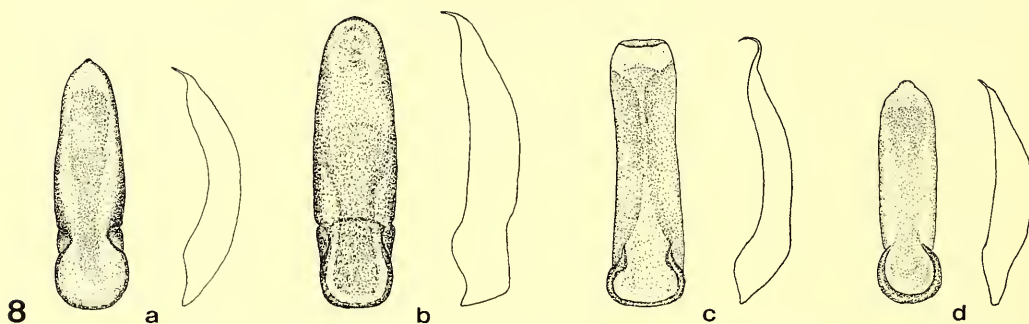


Fig. 8a–d. Aedeocagus of *Nepalicrepis*. a. *smetanai*, spec. nov.; b. *darjeelingensis* Scherer; c. *loebli*, spec. nov.; d. *besucheti*, spec. nov.

Nepalicrepis loebli, spec. nov.

(Fig. 8c)

Holotype ♂. NEPAL, Prov. Bagmati, Malemchi, 2800 m, 17. IV. 1981, leg. Loebel & Smetana (CNC, Ottawa). – Paratypes. NEPAL, Prov. Bagmati, Malemchi, 2800 m, 14. IV. 81 15 ♂♂, 7 ♀♀, 16. IV. 81 1 ♂, 1 ♀, same data as holotype 3 ♂♂, 3 ♀♀. – Prov. Bagmati, Gul Bhaniyang, 2600 m, 6. IV. 81 1 ♂, 2 ♀♀; Prov. Bagmati, Chaubas, 2600 m, 5. IV. 81 2 ♀♀, leg. Loebel & Smetana (CNC, Ottawa; some paratypes in Zoologische Staatssammlung München).

Diagnosis. Length: ♂♂ 2,28–2,44 mm, type 2,28 mm, average 2,32 mm (n = 8). Width: ♂♂ 1,36–1,52 mm, type 1,36 mm, average 1,42 mm (n = 8). Length: ♀♀ 2,40–2,56 mm, average 2,52 mm (n = 6). Width: ♀♀ 1,56–1,76 mm, average 1,70 mm (n = 6).

Description

Elytra reddish brown, only punctures and a narrow suture darker brown; margin and base (= epipleural ridge) very narrowly pitch brown; head and pronotum darker chestnut brown; antennae reddish brown, segments 1–2 or 1–3 somewhat more yellowish; underside, including all femora pitch brown with a reddish tint; tibiae and tarsi somewhat brighter.

Distance between rims of antennal sockets (0,14 mm) broad, but somewhat narrower than square diameter of one eye (0,18 mm); distance between eyes 0,40 mm; frontal carina between antennae swollen and narrowing anteriorly on the triangular frons; antennal calli distinct, divided by the hind edge of frontal carina and limited behind by the deep suture which is leading on both sides of the head to the hind margin of eye; head smooth.

Antennae slender, somewhat thickening from segment 5 on; 5 and 6 thickening more apically, the rest more cylindrical; lengths of antennal segments in mm: 0,22 : 0,12 : 0,12 : 0,12 : 0,14 : 0,14 : 0,14 : 0,15 : 0,15 : 0,14 : 0,20; antennae extending over first third of elytra.

Pronotum covered with fine punctures; a shallow transverse depression near base which is bounded sideways by indistinct longitudinal folds; sides slightly curved; front angles beveled; width in front of bevelled front angles 0,68 mm, just behind front angles 0,92 mm, on hind angles 1,02 mm; length of pronotum 0,6 mm.

©Base of elytra not broader than base of pronotum; no basal and no humeral calli; extremely short alae; scutellum normal; punctures of elytral rows extremely fine, rows often disturbed; the elytral rows are easier to see by the dark halos of punctures than by the extreme fine impression of the punctures.

Legs normal for the genus, first tarsal segment of hind legs about two thirds of length of tarsal segments 2–4 together.

Variation. Some females have darker elytra, as dark as pronotum and head, some with metallic glance; there is variation in the depth of the antebasal depression on pronotum; there can be some stronger punctures inside the antebasal impression of pronotum; females are distinctly larger than males.

Discussion

This and the preceding species *N. smetanai* separates from *N. darjeelingensis* by its shallow antebasal impression on the pronotum, which is in *darjeelingensis* exact and deep. Besides this character in *darjeelingensis* the sides of the pronotum are diverging anteriorly, in *smetanai* the sides are straight and parallel, in *loebli* slightly arched and somewhat constricted anteriorly. All three have closed anterior coxal cavities with a broad prosternal process between coxae. *N. darjeelingensis* and *smetanai* have regular punctate striate elytra, while in *loebli* this punctation is much less strong and a further species, from which we have three females in this material, the punctation is confuse with only a trace of longitudinal single or double rows.

Nepalicropis besucheti, spec. nov.

(Fig. 8d)

Holotype ♂. INDIA, West Bengal, Darjeeling District, Tonglu, 3100 m, 16. X. 1978, leg. Besuchet & Löbl (Mus. Hist. Nat., Genève). – Paratypes. INDIA, West Bengal, Darjeeling District, Tonglu, same data as holotype, 193 specimens, 2700 m 11 specimens, 16. X. 1978. – Darjeeling District, Singla, 300 m, 17. X. 1978 1 ♂, leg. Besuchet & Löbl (Mus. Hist. Nat., Genève; some paratypes Zoologische Staatssammlung München).

Diagnosis. Length ♂♂: 1,76–2,00 mm, average 1,87 mm (n = 11); holotype 1,92 mm; ♀♀ 1,90–2,12 mm, average 1,97 mm (n = 12); width: ♂♂ 0,96–1,24 mm, average 1,15 mm (n = 11); holotype 1,12 mm; ♀♀ 1,20–1,48 mm, average 1,32 mm (n = 12).

Description

Reddish brown; legs, antennae, and portion of head below antennal calli yellowish brown; lateral margin and base of pronotum, and base of elytra very narrowly margined with black.

Head smooth; distance between eyes 0,44 mm; square diameter of one eye 0,17 mm; distance between antennal rims comparatively broad (0,11 mm); antennal calli distinct and separated by hind corner of frons; frons triangular, somewhat swollen in the middle in front of antennal calli.

Antennae gradually thickening from segment 3–11 (0,04–0,06 mm) and extending backwards shortly beyond base of elytra; length of antennal segments in mm: 0,18 : 0,08 : 0,06 : 0,07 : 0,08 : 0,08 : 0,09 : 0,09 : 0,10 : 0,10 : 0,16.

Sides of pronotum nearly straight and parallel in basal half, frontal half only somewhat constricted towards oblique frontal angles; width of pronotum on the basal half 0,08 mm, just behind oblique front angles 0,74 mm; median length 0,5 mm, lateral length at level of front setal pore/ hind angle 0,3 mm; basal impression shallow, very weak; fine scattered punctation present on basal half of pronotum.

Scutellum small, equilaterally triangular.

Puncturation of elytra in distinct regular rows, with short scutellar row; basal callus absent, humeral callus absent or at most scarcely indicated by a swelling only.

Aedoeagus (fig. 8 d) 0,72 mm long.

Variation. Some specimens can be dark chestnut brown with somewhat darker antennae, but the latter are never blackish; there is also some variation in the strength of the punctuation of the elytra; aedoeagus 0,68–0,74 mm.

Derivatio nominum: The colleagues Drs. C. Besuchet, I. Löbl, and A. Smetana, who collected this material, should be honoured with the dedication of these species names from a genus which bears the name of a country which owes them innumerable contributions to entomology.

Key to the *Nepalicrorepis* species

- 1 (4) Basal impression of the pronotum distinct; sides of pronotum in basal half diverging or moderately rounded
- 2 (3) Sides of pronotum diverging conspicuously in front; basal impression of pronotum deep; aedoeagus fig. 8 b *N. darjeelingensis* Scherer
- 3 (2) Sides of pronotum not diverging conspicuously in front, very moderately rounded; basal impression of pronotum shallow but distinct; aedoeagus fig. 8 c; unmistakable for another
. *N. loebli*, spec. nov.
- 4 (1) Basal impression of pronotum weak and indistinct; sides of pronotum in basal half straight and parallel
- 5 (6) Antennal segment 3 distinctly shorter than 2; aedoeagus fig. 8 d *N. Besucheti*, spec. nov.
- 6 (5) Antennal segment 3 as long or even longer than 2; aedoeagus fig. 8 a *N. smetanai*, spec. nov.

Eudoliamorpha, gen. nov.

From those genera in which the pronotum shows a considerable constriction in front of the base two genera come into question, *Lipromorpha* (Chûjô & Kimoto 1960) and *Eudolia* (Jacoby 1885). In *Lipromorpha* the sides of the pronotum show no margins, they are rounded, the elytra have regular rows of punctures with semi-erect setae; *Eudolia* shows distinct margins at the sides of the pronotum, the elytra are confusely punctured or in very narrow, close, not countable, semiregular rows without setae. It was considered to include a new species which was discovered in the Himalayas in the genus *Eudolia*, but so many characters are different which confirm the separate status of a new genus.

Eudolia

Base of pronotum from hind angle on a short distance obtuse and margined, then straight or even a small indentation in the middle.

Punctures on elytra confusely placed or in very close semiregular, not countable rows.

Third tarsal segment more or less entire, short, and excavated, shorter than broad; tibiae rounded and without any spine at the apex.

Frontal coxae conical, high, nearly touching each other; prosternal process very deep between coxae and narrow, widening behind and closing the coxal cavities with the comparatively broad epimeres.

Eudoliamorpha

Base of pronotum from hind angle on not obtuse; base distinctly double sinuous, what means, the middle of the base is lengthened backwards.

Punctures on elytra in nine regular rows on each elytron, besides a short scutellar and a marginal row.

Third tarsal segment distinctly split, longer than broad; tibiae laterally compressed, their upperside rounded, with a distinct spine at the apex.

Frontal coxae not as conical, not as high, broader; prosternal process not deep between coxae, broader, margined at both sides, bent down backwards, widening but not quite reaching the epimeres, coxal cavities open.

Head with short genae, much shorter than one eye long.

Head with long genae, as long as one eye.

Apical or intermediate antennal segments strong or even dilated.

All antennal segments slender.

The frons of *Eudolia sumatrana* Jacoby is different from the one of the species known from the Himalayas which are described by Maulik (1926). In *E. sumatrana* the frons is triangular in front of the antennae (fig. 11 a), the Himalayan species have a strong frontal ridge (fig. 11 b); *E. sumatrana* has no orbital sulcus between antennal calli and inner margin of eye (fig. 11 a), the Himalayan species *E. himalayensis*, *nila*, and *ratula* have a very strong and deep orbital sulcus (fig. 11 b); *Eudoliamorpha* is missing this sulcus, but the antennal calli are less separated, are tiny and more or less drop- or ridge-like extending between antennal sockets and frontal ridge, not squareshaped as in *E. sumatrana* or rhomboid as in the Himalayan *Eudolia* species (fig. 11 c) Fig. 11 c demonstrates the long frontal carina which is extremely narrow on a plane triangular frons of *Eudoliamorpha darjeelingensis* and shows the long genae. Figs 9 a–c show the differences in general shape, the deep antebasal impression on pronotum of *Eudolia sumatrana*, the less deep antebasal impression on pronotum, especially in the middle of pronotum of the Himalayan *Eudolia* species. The short obtuse basal margin inside the hind angles of pronotum on the otherwise nearly straight base of pronotum of *Eudolia* can be seen in fig. 9 a and b, the double sinuous base of *Eudoliamorpha* in fig. 9 c.

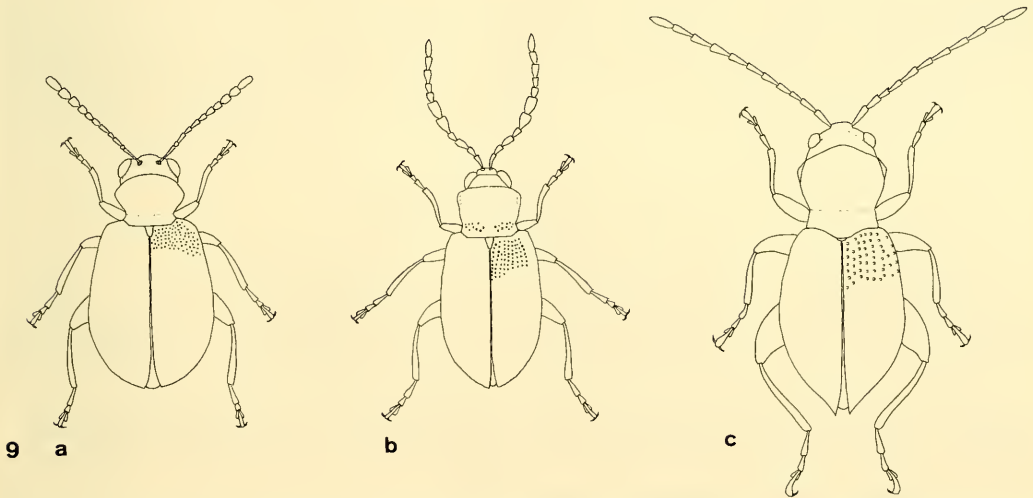


Fig. 9 a–c. Sketch of a. *Eudolia sumatrana* Jacoby; b. *E. himalayensis* Maulik; c. *Eudoliamorpha darjeelingensis*, spec. nov.

Eudoliamorpha darjeelingensis, spec. nov.

(Figs 9–12)

Holotype ♂. INDIA, West Bengal, Darjeeling District, Tiger Hill, 13.X.78, 2200–2300 m, leg. Besuchet & Löbl (Mus. Hist. Nat., Genève). – Paratype ♀. Same data as holotype (Zool. Staatssammlung München).

Diagnosis. Length: Holotype ♂ 2,40 mm, paratype ♀ 2,44 mm; width: holotype ♂ 1,0 mm; paratype ♀ 1,06 mm.

Description

Reddish brown; upper part of head a little darker; humeral and basal calli on elytra more yellowish; antennae not darkened apically.

Head (Fig. 11 c) smooth, frontal lines very distinct, the part in front of these lines nearly step-like elevated and no distinct separation of antennal calli present, the elevated frontal part leads without a disruption to space between antennal rim and frontal ridge; antennal sockets close together, leaving space only for a very narrow frontal carina on a flat triangular frons and widens triangularly near front margin; distance between eyes 0,38 mm; transverse diameter of one eye 0,14 mm.

Antennae extending to middle of elytra, slender; the segments in mm: 0,23 : 0,13 : 0,12 : 0,13 : 0,17 : 0,16 : 0,18 : 0,18 : 0,17 : 0,16 : 0,24.

Pronotum up to a magnification of 50 smooth, only inside the transverse antebasal depression a row of punctures; length of pronotum 0,74 mm, width on front angles nearly as broad as long (0,75 mm), on transverse constriction 0,53 mm, on hind angles 0,60 mm; front angles obtuse, lateral margins narrow but distinctly visible from above; basal margin distinctly widened medially behind, therefore double sinuous; frontal and hind setal pores very distinct; constriction on antebasal depression deep and curved.

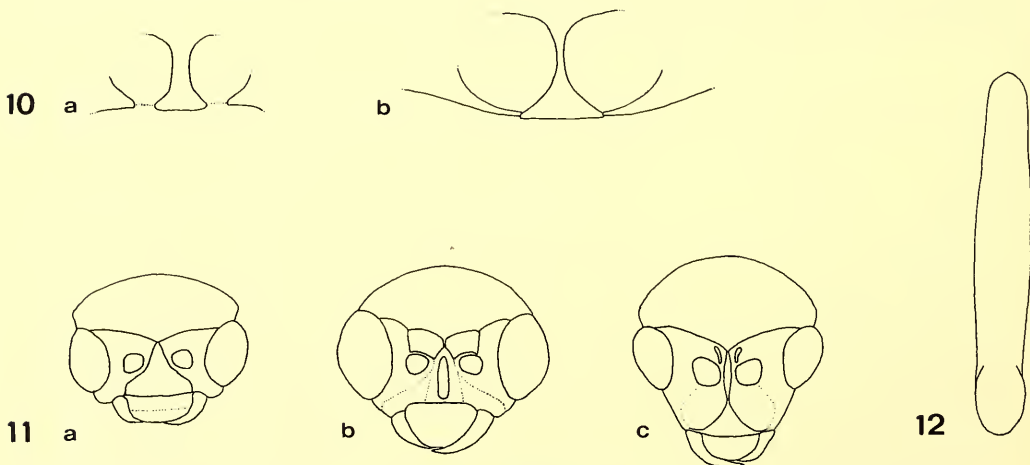


Fig. 10a–b. Anterior coxal cavities of a. *Eudoliamorpha darjeelingensis*, spec. nov.; b. *Eudolia nila* Maulik.

Fig. 11a–c. Head of a. *Eudolia sumatrana* Jacoby; b. *E. nila* Maulik; c. *Eudoliamorpha darjeelingensis*, spec. nov.

Fig. 12. Aedeagus of *Eudoliamorpha darjeelingensis*, spec. nov.

Scutellum conspicuously small.

Elytra broader on base than base of pronotum; distinct humeral and basal calli; transverse depression behind basal calli; a short scutellar row and nine rows of punctures, which are stronger in front of the transverse depression and are fading backwards; apterous no alae present.

Legs long; tibiae laterally compressed, especially those of middle and hind legs, uppersides rounded; third tarsal segment on all legs deeply bilobe; first tarsal segment of hind legs has a proportion to segments two till four combined as 2:3.

Anterior coxal cavities (fig. 10a) not completely closed; prosternal process somewhat prolonged over coxae and delated but not reaching the epimeres.

Aedeagus 0,82 mm long (fig. 12).

©Variation: There is a little variation between type (♂) and paratype (♀) the pronotum is a little broader (width 0,76 mm; length 0,72 mm); the paratype has the punctures on elytra darkened and the upperside of the hindfemora dark pitch brown.

Xuthea nepalensis Scherer

Scherer, 1983, Ent. Arb. Mus. Frey 31/32: 157.

New collection record: NEPAL, Lalitpur Distr., Godawari (nr. Kathmandu), 14.VII.–17.VIII.1967, 5000–6000 m, Malaise traps, CNE, (CNC) 11.

Genus Batophila Foudras

Of the nine species hitherto known of this genus two are West European, two East European, one Central- and North European, ohne East Palaearctic: Ussuri, Amur to Taiwan. These species are very typical without any depression on the pronotum. Three of these nine species were described by Chen (1939) from the palaeartic part of China, one from Hopeh, one Kansu, and one Kansu and Shensi. According to the original descriptions two species from Kansu (*sinensis*, *subcostata*) are depressed on the base of pronotum and that from Hopeh (*subplana*) should be depressed on each side near the base of the pronotum. The two new species described below seem to be closely related to these three *Batophila* species from the palaeartic part of China on the basis of the structure of the pronotum but nevertheless they are unique and less related to any other species except of the pronotum. They are the first *Batophila* species known from the Oriental Region and especially *femorata* finds its place somewhat isolated in the genus.

Batophila costata, spec. nov.

(Fig. 13 a)

Holotype ♂. INDIA, West Bengal, Darjeeling District, Tonglu, 3100 m, 16.X.78, leg. Besuchet & Löbl (Mus. Hist. Nat., Genève). – Paratypes. INDIA, West Bengal, Darjeeling District, Tonglu, same data as holotype 11 ♂♂, 3 ♀♀; Tiger Hill, 2500–2600 m, 18.X.78 1 ♂, 3 ♀♀, leg. Besuchet & Löbl (Mus. Hist. Nat., Genève). – NEPAL, Khandbari District, above Sheduwa, 300 m, 1.IV.82 3 ♀♀, leg. A. & Z. Smetana (CNC, Ottawa).

Diagnosis. Length: ♂♂ with head 1,46–1,68 mm, average 1,56 mm (n = 13), holotype 1,48 mm; without head 1,28–1,44 mm, average 1,36 mm (n = 13), holotype 1,28 mm; ♀♀ with head 1,68–1,80 mm, average 1,73 mm (n = 5), without head 1,52–1,56 mm, average 1,54 mm (n = 5). Width: ♂♂ 0,70–0,80 mm, average 0,76 mm (n = 13), holotype 0,72 mm; ♀♀ 0,86–0,92 mm, average 0,88 mm (n = 5).

Description

Head, pronotum and elytra greenish aeneous; antennae and legs bright reddish brown; apical segments of antennae somewhat darkened; hind femora pitch brown with faint metallic lustre.

Head reticulated with some coarse punctures near inner hind margin of eyes; frons elevated between antennae; antennal calli not separated from frons, their front angles extending between antennal sockets and hind angle of triangular frons; frons exactly twice as broad as one transverse diameter of eye (0,24 : 0,12 mm); distance of antennal sockets 0,06 mm.

Antennae extending somewhat beyond base of elytra; apical five segments somewhat widened; length of antennal segments in mm: 0,12 : 0,09 : 0,06 : 0,07 : 0,08 : 0,07 : 0,08 : 0,08 : 0,08 : 0,08 : 0,13.

©Zoo Sides of pronotum nearly straight, only weakly rounded; front angles thickened and beveled; constricted near base, widest before front angles (0,50 mm), 0,44 mm at hind angles; length 0,40 mm; surface reticulated and strongly punctured; across the base a light depression.

Elytral base only slightly broader than pronotum at base, elliptical, without humeral and basal calli; unwinged; punctures in regular rows with conspicuously costate intervals; scutellar row very short; elytral margins just visible from above; epipleura distinct to apex.

Aedeagus fig. 13 a, 0,71 mm long.

Variation. The first tarsal segment is distinctly broader than the corresponding tibia in the male, in the female somewhat narrower; there is some variation in the prebasal depression of the pronotum, this depression extends mostly across the whole base of pronotum, but it can also be less deep in the middle.

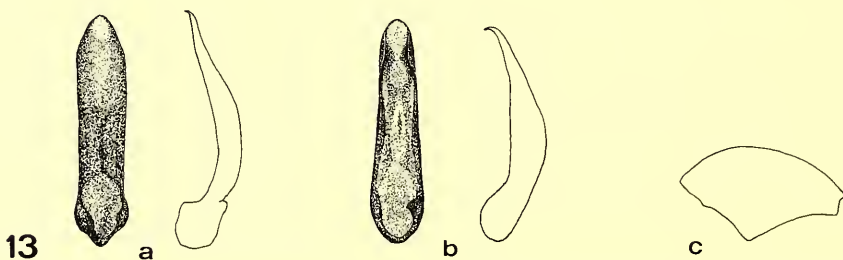


Fig. 13 a–c. Aedeagus of a. *Batophila costata*, spec. nov.; b. *B. femorata*, spec. nov.; c. hind femur of *B. femorata*, spec. nov.

***Batophila femorata*, spec. nov.**

(Figs 13 b, c)

Holotype ♂. NEPAL, Province Bagmati, Yangri Ridge, 4150 m, 22.IV.81, leg. Löbl & Smetana (CNC, Ottawa). – Paratypes. NEPAL, Province Bagmati, Yangri Ridge, same data as holotype, 13 ♂♂, 26 ♀♀. – Mere Dara, 3200 m, 8.IV.81 1 ♂, 2 ♀♀. – Below Thare Pati, 3400 m, 13.IV.81 1 ♀. – Malemchi, 2800 m, 14.IV.81, 1 ♀, leg. Löbl & Smetana (CNC, Ottawa, some paratypes in Zoologische Staatssammlung München).

Diagnosis. Length: ♂♂ 1,30–1,50 mm; average 1,41 mm (n = 10), holotype 1,44 mm; ♀♀ 1,50–1,68 mm, average 1,60 mm (n = 10). Width: ♂♂ 0,72–0,84 mm, average 0,80 mm (n = 10), holotype 0,86 mm; ♀♀ 0,86–0,94 mm; average 0,90 mm (n = 10).

Description

Head, pronotum, and elytra brassy; antennae and legs bright reddish brown; base of hind femora drawn out into a triangular process.

Head reticulated with few coarse punctures on both sides of frons and vertex; distance between eyes nearly three times as broad as transverse diameter of one eye (0,29 : 0,10 mm); distance between antennal sockets 0,08 mm; antennal calli very flat, scarcely visible, defined only by their finer reticulation; frontal ridge between antennal sockets broadened and flat.

Antennae extending over short scutellar row of elytra; segments 3–6 narrow, 7 widened apically, 8–10 more cylindrical; length of antennal segments in mm: 0,14 : 0,08 : 0,07 : 0,06 : 0,08 : 0,06 : 0,07 : 0,07 : 0,07 : 0,07 : 0,12.

Sides of pronotum slightly rounded and somewhat converging in front; no distinct oblique front angles as typical for the species of this genus, not thickened; widest at middle (0,59 mm), 0,55 mm wide at base; length of pronotum 0,43 mm; surface reticulated with punctures which are fading in front of the scutellum to the middle; base slightly depressed at both sides of the middle.

Punctures on elytra in nine regular rows; intervals raised but not as strong as in the preceding species; scutellar row short (three punctures); disc somewhat flattened; as typical for the genus humeral and basal calli absent.

Tarsal segments of fore and middle legs very short; form of hind femora appears to be unique for the subfamily; the basal margin is drawn out into a triangular process (fig. 13c) that points downwards; the tibia is taken up into a groove in resting position so that it is hidden in its middle part in lateral view by the apex; first segment of hind tarsi about as long as the following together.

Aedoeagus 0,65 mm long (fig. 13b).

Variation. The metallic colour of head, pronotum, and elytra appears greenish and purple shining in some specimens; variation is to be found also in the reticulation of head and pronotum which can be marked heavier or not.

Remarks

Compared to the preceding species the head is much more concealed in the pronotum, consequently not much contributing to the length of the body.

Genus *Minota* Kutschera

Minota nigropicea (Baly) from Japan is unknown to me. The five other species had been seen for a long time as one species (*obesa* Waltl) with several subspecies, variations, and synonyms. Biondi (1986) revised them and they are regarded now as five species which have their distribution from the Pyrenees in the West, the Alps, southern Central Europe, northern Balkan Peninsula till to the Carpathian Mountains. Biondi (1986) explains the origin of these species by isolation during the pleistocene.

Minota specimens are apterous without humeral and basal calli on elytra and are mostly found under stones, moss, by collecting techniques with a sieve from the upper layer of soil, or they are swept from grass.

Smolka (1928) proofed as food plant for *M. obesa*, or better *obesa*-complex at this time, *Vaccinium myrtillus* L. for specimens from Moravia close to the Bohemian border at the upper course of the river Sázawa.

The species discovered now by the Drs. Besuchet and Löbl in the Himalayas at an elevation of 3 100 m could have its origin also from an isolated population during the pleistocene and took its own evolution more modified in shape than the *obesa*-Artenkreis.

Minota himalayensis, spec. nov.

(Figs 14, 15 a)

Holotype ♂. INDIA, West Bengal, Darjeeling District, Tonglu, 3 100 m, 16. X. 78, leg. Besuchet & Löbl (Mus. Hist. Nat., Genève). – Paratypes. Same data as holotype 4 ♂♂, 2 ♀♀ (4 paratypes Mus. Hist. Nat., Genève, 2 paratypes Zool. Staatssammlung München).

Diagnosis. Length: ♂♂, holotype 2,64 mm, paratypes 2,72–3,04 mm, average 2,78 mm (n = 5); ♀♀ 2,48–2,62 mm, average 2,55 mm (n = 2); width: ♂♂, holotype 1,48 mm, 1,42–1,52 mm, average 1,48 mm (n = 5); ♀♀ 1,52–1,58 mm, average 1,55 mm (n = 2).

Description

Chestnut brown, head somewhat darker; legs and antennae of a brown colour with a piceous tint, somewhat brighter than head, pronotum and elytra; base of pronotum with a narrow dark margin; punctures on elytra dark.

Head above front lines with a very fine microsculpture; front line weakly curved, nearly horizontal, from one hind margin of eye to the other; antennal calli square shaped, longitudinal rectangles, touching with one corner; frons broad (0,44 mm), compared to one transverse diameter of eye (0,16 mm) equals 11 : 4; space between antennae equals one transverse diameter of one eye, flat, sculptured and heart shaped, produced in front to a very narrow frontal carina with cavities at both sides (fig. 15 a).

Antennae gradually thickening towards apex; extending over first quarter of elytra; the segments in mm: 0,22 : 0,12 : 0,11 : 0,12 : 0,14 : 0,11 : 0,16 : 0,16 : 0,16 : 0,15 : 0,20.

Pronotum with extreme fine microsculpture; the typical two lines on the base one third as long as pronotum; sides somewhat rounded and narrowed in front; front angles distinctly obtuse with distinct front setal pores; length 0,74 mm, width at base 1,12 mm, before front setal pore 0,96 mm.

Scutellum small, hidden by hind margin of pronotum.

Elytra without humeral and without basal calli, apically tapering; scutellar row of punctures consisting of two punctures only, the other nine rows of punctures on each elytron very exact but hardly engraved, punctures visible only by their dark colour.

Aedoeagus (fig. 14) 0,86–0,91 mm long.

Variation. On the pronotum variation is to be seen in the shape of the obtuse frontal angles, which are not always as distinctly distinguished obtuse as in the type specimen, but more rounded, though with a marked front setal pore; some specimens show traces of striae on the elytra, in some specimens punctures on elytra are more but weakly engraved and not darkly coloured.

Discussion

This species is distinctly different from its palaeartic relatives, it is much less punctured on elytra and pronotum, the longitudinal folds on the base of the pronotum are less strong. *M. nigropicea* (Baly) from Nagasaki should have the sides of pronotum straight and parallel, upperside of pronotum distantly and finely punctured, elytra regularly punctate striate, the strength of the punctation is not mentioned, the colour of this species is “nigro-picea”.

Paraminota, gen. nov.

General shape elliptical, narrowed in front and apically; whole beetle bent when seen in lateral view; base of pronotum as broad as base of elytra, no humeral and no basal calli on elytra; a fine longitudinal fold present on either side of the base of the pronotum.

Interantennal space comparatively broad, but less broad than one transverse diameter of eye; frontal carina broad between antennal sockets, then narrowed.

Pronotum very convex; front angles only moderately thickened and evenly bent to front margin; base only weakly curved, with two fine longitudinal folds, each one on either side; anterior coxal cavities closed (hardly visible), epimeres forming a thin clasp behind coxae; prosternal process moderately broad.

Elytra without humeral and basal calli, tapering towards apex, without visible punctation; apterous.

Claws bifid; posterior tibiae armed with short normal spine; upperside of hind tibiae rounded, apically flattened, on its extreme apex somewhat excavated in front of the insertion of hind tarsi.

Discussion

It was severely considered if the species for which this genus is established should be regarded as a member of the genus *Minota*. Apart from the body size (*Paraminota* 1,1–1,4 mm; *Minota* 2,5–4 mm) this species stands distantly aside from *Minota*. Especially the pronotum is different, which has no obtuse frontal angles, when although there is in some *Minota* forms a tendency to more rounded front angles but always with a very distinct front setal pore. The longitudinal folds at the base of the pronotum are moved more sideways in *Paraminota*. The strongly vaulted pronotum makes the

side margins not visible when seen from above. The frontal lines on the head are more oblique towards the hind margins of the eyes, otherwise there are some similarities in both genera as the interantennal space and frontal carina (figs 15 a–b). The femora of the four front legs are more robust in *Paraminota* and very typical is the lateral view, the whole beetle is strongly curved (fig 16).

Genotype: *Paraminota minima*, spec. nov.

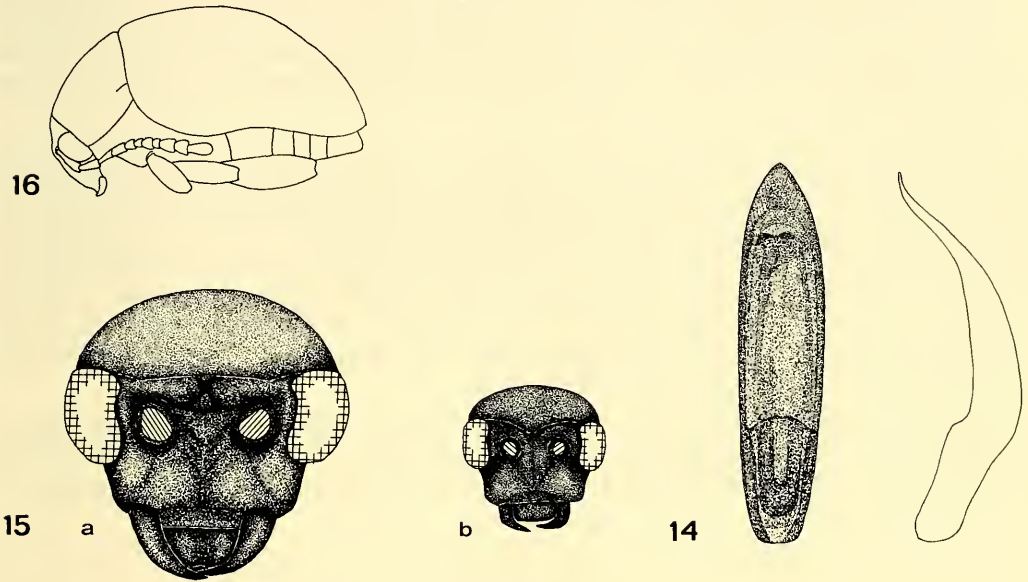


Fig. 14. Aedeagus of *Minota himalayensis*, spec. nov.

Fig. 15 a–b. Head of a. *Minota himalayensis*, spec. nov.; b. *Paraminota minima*, spec. nov.

Fig. 16. Lateral view of *Paraminota minima*, spec. nov.

Paraminota minima, spec. nov.

(Figs 15 b, 16)

Holotype ♂. NEPAL, Prov. Bagmati, Yangri Ridge, 4350 m, 22. IV. 81, leg. LoebL & Smetana (CNC, Ottawa).
– Paratypes. NEPAL, same data as holotype 3 ♂♂, 4 ♀♀. – Prov. Bagmati, Mere Dara, 3200 m, 8. IV. 81 3 ♂♂,
4 ♀♀, leg. LoebL & Smetana (9 paratypes in CNC, Ottawa, 5 paratypes in Zoologische Staatssammlung München).

Diagnosis. Length: ♂♂ 1,14–1,34 mm, type 1,24 mm, average 1,26 mm (n = 7); ♀♀ 1,16–1,40 mm, average 1,29 mm (n = 8). Width: ♂♂ 0,43–0,82 mm, type 0,76 mm, average 0,73 mm (n = 7); ♀♀ 0,74–0,88 mm; average 0,80 mm (n = 8).

Description

Head dark red brown; pronotum red brown; elytra dark reddish piceous, apically reddish; first two antennal segments reddish, the following darker; underside and legs reddish piceous, hind femora somewhat darker.

Eyes very small; distance between eyes 0,28 mm, one diameter of eye 0,08 mm, distance between antennal rims 0,10 mm; proper antennal calli absent but replaced by a ridge shaped impressed line leading from hind edge of the frontal carina to the hind margin of eyes, behind antennal sockets this ridge is somewhat more swollen and from different kinds of view it gives the impression of antennal calli

(fig. 15b); longitudinal frontal carina distinct; head without punctures; on frons and frontal impressed line some fine setae.

Antennae extending with their apical three joints over pronotum; especially the last five segments very pubescent and more dilated, segments 3–6 very thin. The lengths of antennal segments in mm: 0,14 : 0,06 : 0,05 : 0,05 : 0,06 : 0,05 : 0,05 : 0,05 : 0,08 : 0,09 : 0,12.

Width of pronotum 0,56 mm, length 0,39 mm; very convex, side margins only visible from above near base; sides only weakly arched and bent at front angles to frontal margin enclosing a rectangular angle with only a light thickening; base somewhat curved, not wider in the middle; two fine longitudinal folds, each one on either side; upperside not punctured, a magnification more than 50 shows some fine scratch-like "punctures". Prosternal process narrowed between coxae, behind them widened, bent downwards.

Elytral base as wide as pronotum; elytra widening about the first third of elytral length (0,76 mm width), tapering very obviously from there to apex; no basal and no humeral calli; surface smooth, nearly somewhat transparent, a magnification of more than 50 shows fine scratches, of a leather-like appearance, but not chagreened. The uppermost point of elytra seen from behind looks transversely cut. Epipleurae steep and broad in basal half; as often in apterous species, epipleural ridge very sharp, seen from above this ridge leads from the apex around side margin and base till scutellum.

Tarsi pubescent and stout; all first tarsal segments in the male delated; first tarsal segment of hind legs shorter than 2–4 together; upperside of hind tibiae rounded, apically somewhat flattened and on its outer edge with some bristle-like setae at the sides.

Variation. A few specimens have a yellowish red pronotum, also head (with black frontal ridge), yellowish red underside and legs with fourth tarsal segment black. A magnification of more than 50 shows in some specimens a trace of elytral punctation, but it is hardly to say if in regular rows or not.

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References

- Baly, J. S. 1865. Descriptions of new genera and species of Galerucidae. — *Ann. Mag. Nat. Hist. ser. (3)* 16: 247–255
- Biondi, M. 1986. Lo status sistematico del complesso *Minota obesa*: un approccio morfologico, statistico e biogeografico (Coleoptera, Chrysomelidae, Alticinae). — *Ann. Mus. civ. Stor. nat. Genova* 86: 45–64
- Chen, S. H. 1934. Coléoptères halticinae recueillis par M. H. Sauter a formose. — *Ann. Soc. Ent. France* 103: 175–185
- 1935. Coleoptera Halticinae de la collection du Muséum recueillis par le Dr. J. Harmand au Sikkim. — *Bull. Soc. Ent. France* 40: 75–80
- 1939. New Genera and Species of Chinese Halticinae. — *Sinensia* 10: 56–91.
- Chûjô, M. and Kimoto, S. 1960. Descriptions of three new genera and a new species of Chrysomelid-beetles from Japan, with some notes on the Japanese species. — *NIPONIUS* 1(4): 1–10
- Dejean, P. F. M. A. 1837. Catalogue des coleopteres de la collection de M. le comte Dejean. Troisieme edition, revue, corrigee et augmentee, livr. 5, pp. 385–503, Paris
- Duvivier, A. 1892. Les Phytophages du Chota-Nagpore. 2^e Note. — *Ann. Soc. Ent. Belgique* 36: 396–449
- Heikertinger, F. 1924. Die Halticinen genera der Palaearktis und Nearktis. Bestimmungstabellen. — *Koleopterologische Rundschau* 11 (1/2): 25–70

- Jacoby, M. 1885. Descriptions of new Genera and Species of Phytophagous Coleoptera from the Indo-Malayan and Austro-Malayan subregions, contained in the Genoa Civic Museum. — *Ann. Mus. Civ. Genova*, ser. 2, 2 (22): 20–76
- 1887. Descriptions of the phytophagous Coleoptera of Ceylon, obtained by Mr. George Lewis during the years 1881–1882. — *Proc. Zool. Soc. London* 1887: 65–119, pl. X and XI
- Latreille, P. A. 1829. In Cuvier. *Le Regne Animal*, 2nd ed., vol. 5: 24 + 556, Paris
- Maulik, S. 1926. The Fauna of British India, including Ceylon and Burma. Coleoptera. Chrysomelidae (Chrysomelinae and Halticinae). London. I–13, 1–442
- Medvedev, L. N. 1984. Chrysomelidae from the Nepal Himalayas. I. Alticinae (Insecta: Coleoptera). — *Senckenbergiana biol.* 65 (1/2): 47–63
- Scherer, G. 1969. Die Alticinae des Indischen Subkontinents (Coleoptera-Chrysomelidae). — *Pacific Insects Monograph* 22: 1–251
- 1974. *Clavicornaltica* a new genus from Ceylon (Coleoptera-Chrysomelidae-Alticinae). — *Revue suisse Zool.* 81 (1): 57–68
- 1979. Ergebnisse der Bhutan-Expedition 1972 des Naturhistorischen Museums in Basel. Coleoptera: Fam. Chrysomelidae, Subfam. Alticinae (1. Teil). — *Entomologica Basiliensia* 4: 127–139
- 1983. Beitrag zur Gattung *Xuthea* Baly (Coleoptera-Chrysomelidae-Alticinae). — *Ent. Arb. Mus. Frey* 31/32: 157–159
- Smolka, A. 1928. Über Nährpflanzen von zehn Käferarten. — *Entom. Nachrichtenblatt* 2(4): 67–75

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